

## Abstract

A software method is disclosed for processing data pertaining to connections in a communications network, such as a computer network. The data may be used to map the topology of the network to aid network management. The system creates data structures referred to as tuples to store the relationships between network nodes. A connection calculator receives tuple information from a tuple manager and creates additional tuples based on this data. The connection calculator identifies singly-heard host links, from which it then builds tuples to represent the network infrastructure. To build the infrastructure, the method creates tuples for the singly-heard host links, and then creates tuples for conn-to-conn links based on existing tuples and on hints derived from singly-heard host links tuples, which hints are maintained as extra host links tuples. The method then attempts to disprove invalid conn-to-conn links tuples and attempts to resolve conflicts between inconsistent tuples. The method creates tuples for nodes involving shared media connections. If the connection calculator cannot create a tuple because there is insufficient information about a connection, it requests additional information from that node. After the tuples are created, the connection calculator consolidates those binary tuples involving shared media connections into n-ary tuples to represent the shared media connection. The refined tuples may then be used to identify changes in the network topology.